Executive Summary

Libraries and information centers always played an important role in all types of libraries. In special library system the role of library and librarian is crucial and supporting to education and research. Libraries are treated as store house of information and prime role is dissemination of information to users by organizing different services. Since recent past industrial libraries are growing fast as research activities are increasing and need libraries to hold the essential collection. A separate entity is derived from the category of special libraries and now called as industrial libraries, corporate libraries, and chemical industry libraries too.

The chemical industry develops new products and manufacture variety of products for human lives. Many of the products from the chemical industry, such as detergents, soaps and perfumes, are purchased directly by the consumers, 70% of chemicals manufactured are used to make products by other industries including other branches of the chemical industry. The chemical industry sector has witnessed growth nearly about 13-14% in the last five years.

Chemical industries are growing fast and treated as core area in national development. Industries are now engaged in research and development activities along with production, R and D and new innovative concept development is taking lead and these industries now need libraries and information centers to support their needs. It is also observed that large scale, multinational, medium scale industries along with production of compounds are developing new drugs, chemicals and also establish monopoly by way of obtaining patents. These activities need information support and well managed libraries. Industrial sector is prime developing area and need support of information to enhance its national contribution.

The researcher is working in chemical industry library and managing information support for its users. A cursory review of literature noticed that large scale industries having R and D are having their own libraries. The researcher tempted to assess the status of chemical industry libraries and suggest means to improve its collection development, library services more economically by developing network of industrial libraries. Researcher has faced many problems and challenges in satisfying user needs as they are unique to every researcher and depends on project in hand.
Researcher keeping in mind the situation of chemical industry libraries decided to study and review the progress of libraries in this zone and suggest best means to improve the status of libraries in zone by using ICT. The study is mainly based on chemical industry libraries from Mumbai and Pune cities as majority of chemical industry libraries are available in this zone. The survey of libraries identified many weakness and researcher tried to suggest few ideas to improve the status of industrial libraries.

The role of library in any field is changing and developing fast. The impetus for change must come from the librarian rather than the employer, whose views of change may be rather narrow and also realistic to library profession. Increasingly the industrial library's role is close in involvements in the organization’s business activities, identifying information needs and giving advice to meet those needs. This includes exploitation of external resources, acquisition of special collections and an active role in the development of the “corporate memory” and integrated information systems. The role of the library within its own organization is reviewed, and is placed within the information network.

Library and information support is required in corporate and industries to have proper and pinpointed information to the users as well as fulfill the mission and vision of the industry. The user’s expectations and needs are varied and needs interactions with the users for getting their wants. It is necessary to know the requirements of the users form this area to provide them proper services. Thus to satisfy users and provide user based library and information services there is need to understand the users and hence to undertake user studies from the chemical industries which is flourishing industry presently and review the needs and demands of chemical industry users to analyze, how far they are met the needs from the libraries of parent organization, and how to solve the problems faced by them in getting information in nutshell.

The aim and purpose of the present study is to collect the data pertaining to corporate libraries especially chemical industry libraries in Maharashtra in order to provide a statistical profile of these special type of libraries. The data collected from different libraries indicate the status of chemical industry libraries and discover the challenges and solutions to improve the library and information system in the chemical libraries.
Industries and Enterprises today need insights into markets, customers and their own internal processes, faster than their competitors to capitalize on opportunities and to deliver sustainable business performance. To perform businesses well, chemist need to go beyond the customary approaches to data and its management. For quick decisions, chemist must learn to cope up with the high volume and velocity of real-time structured and unstructured data in different formats. Leading industry analysts have suggested that those who practice this may outperform competition by 20% in every financial metric.

The main reason to undertake this study for the research purpose is that, such analytical studies based in chemical industry users are not yet visible to researcher after performing a literature search on the topic. On the other hand chemical industries are growing and have R and D and IPR units in large scale and multinational industries and they need KRC hence there is a need to conduct such studies which is not considered and analyze the status of working and practicing in industrial libraries. It is also noticed that the demands of users form chemical industries are very specific but varied as per the need of the users. The Growth in the information sector is also exorbitant and keeping track with rising information explosion is very difficult to manage. Unless user needs are analyzed and evaluated the requirements of the research community is very difficult. Hence studies which analyses user needs, analyze the information sources available in the field might add the values in area of chemical industries.

The statement of the topic is “A User Study of Chemical Industry Libraries in Maharashtra”, in which efforts are taken to evaluate the user needs from the chemical industry sector and also framed out the solutions to enhance the chemical industry libraries based on the inputs received from the user’s and librarians survey. The main aim of the study is to conduct a survey of the prominent chemical industry libraries and users of chemical industry libraries in and around Maharashtra, to analyze the expectations, needs and based on data collected enhance the status of chemical industry libraries to provide better information services using advanced practices in the profession.

The objectives have been considered for this research study are: study the need, growth and development of Chemical Industry, study the information needs of the
chemical industry users, study the expectations of industrial and research users from chemical industry libraries, identify the different information resources used and needed by the users, identify and list information resources available in both print and electronic media and develop a model for networking chemical industry libraries in a city and state. The hypotheses selected are: there is a need to develop proper library system for chemical industries, and Networking of libraries may help in sharing the resources among group of chemical industry libraries. Research methods used are: Descriptive research (survey method), secondary analysis method. The population and sample is discussed in this facet. Scope of the study is restricted to chemical industries in Maharashtra having libraries and information system.

This research study is presented in eight chapters. **Chapter 1: Introduction:** Covers the introductory and basic part covering importance, growth and development of chemical industries, requirements of researchers, role of industrial libraries, and need of the research study, reason to select the study with aim, objectives research method used and tools used for the data collection. **Chapter 2: Literature Review:** This chapter analyzes the published and available literature associated with the research study but felt useful to the researcher. The literature gathered from the different information resources is collected, analyzed, synthesized and used in the structure of the study where justification is required or to append as a base to the opinions derived after the detailed investigations by the researchers. The facets considered under the literature review are use and user studies, Information seeking behavior of users, chemical industry libraries and their user needs, expectations of chemical industry users, collection of industrial libraries, and trends in industrial libraries etc. **Chapter 3: Importance of Chemical Industries:** This chapter covers the growth and development of chemical industries in detail. The chapter focuses on global, national and regional development from countries like USA, UK, and India in brief. Maharashtra zone is also specifically discussed and tracked the growth in this zone. **Chapter 4: Need of User Studies:** This chapter is highlighting the need of the user, use and ISB studies and their importance. These studies are mainly conducted to assess the user needs in specific areas. **Chapter 5: Information Sources in Chemical Industries:** This chapter discusses in detail the different information resources used by users and available in different forms for the research or process development purpose as well as filling patents which provide the information required to users. This chapter
also focuses in detail the available information resources and lists them for the best usage of them while performing the research. This also includes paid and free resources in print and digital media. **Chapter 6: Libraries in Chemical Industries and Role of Librarians:** This chapter highlights the issues related to manpower i.e. professionals working in industry libraries and acting as an information provider. **Chapter 7: Data Analysis:** This chapter analyses the data collected from librarians and users and presented in tabular form with observations. This is the supportive chapter to understand the status of libraries and user expectation from industry libraries. Based on the observations findings and suggestions are narrated. **Chapter 8: Findings, Suggestions and Conclusion:** This chapter is summarizes with listing of findings and based on them viable suggestions are listed and concluded the study with identifying scope for the future research. Bibliography and appendices are at the end of the study.

Prominent findings of the study are:

1. Chemical industry libraries sometimes also called as industrial libraries, corporate libraries, chemical R and D libraries etc. Libraries are found in large chemical industries and multinational industries where research element is more powerful along with product and process development. In small scale industries products are only manufactured and main activity is marketing, hence libraries are not associated with them.

2. Industrial librarianship is flourishing due to need of information in every sector like engineering, software, electronics, chemical and pharmaceuticals etc. Library Science syllabus has also included industrial librarianship as a subject to develop industrial librarians with special skills.

3. The users need specific information related to their product, process, new developments, market strategies, future needs in the field etc. For this purpose there is no single source available but the librarian has to consult many references and databases.

4. The collection of library consist of mainly journals, reference books, chemical guide books and internet as well as free and subscribed databases like SciFinder, Scopus, DERWENT patent databases etc. The resources required
by the users are not common and hence collection is limited and developed on demand basis.

5. The users consult to reference books, journals, technical reports, patents, standards, thesis, etc. either in print or e-form.

6. Librarians need advanced skills to manage chemical industry libraries. The management of library is simple but assisting needs of chemist are complex. There is no network of industrial libraries to provide more information support.

7. The main users of the chemical industries are researchers, R and D scientists or chemist, managers, senior consultants, policy makers, analysts etc. MD, CEO, V P, Managers, Chemists (senior scientists), Project chemist, and chemical engineers. All are generally involved in R and D and process or product development activity. It is observed that MD and Presidents are using the libraries very less as they are involved in development and management of company / industry and planning for the future growth and expansion. Chemists, chemical engineers, VP, refer to and make maximum use of libraries as they are really involved in R and D activities of the company. CEO rarely visits libraries. If MD and CEO's required information or data it is provided at their desktop.

8. It is observed that large-scale industries having R and D have appointed qualified librarians. It is observed that chemical industry libraries provide different information services to users for their R and D support. It is observed that 68% of libraries have the membership of other libraries such as IIT, UDCT, and CSIR Labs like NCL etc for getting information for users.

9. Users are preferring to electronic information resources like e-journals, databases and online searching of databases etc. more and hence more focus is given on procuring e-resources slowly.

Researcher has suggested best practices in the form of suggestions to improve the chemical industries.
1. There is a need to appoint qualified librarian in libraries associated with chemical industries to provide information support to develop R and D activity. Since many libraries associated to chemical industries are managed by chemist or temporary staff.

2. The collection of chemical industry library is not strong like other libraries as collection is need based & procured on demand basis. Hence the librarian need to acquire free information from the different sources available & make aware the users about new developments in their research area.

3. The collection development focused on e-publications rather than print. The information required by users many times available over the internet resources. Librarians have to find out different search engines which can provide better chemical information & inform the users like – Google, Google scholar, Scirus, Google library, Google patent, dog pile, Ask Jeeves etc.

4. Librarian need different skill sets to manage user needs which covers information literacy, searching of information from internet, specialized subject databases like chemical pharmaceuticals, drugs, marketing, safety data etc.

5. Librarians can use advance technologies and provide services based on internet, database, soil media, web tools etc. to quickly disseminate information among the group of users over the electronic mail.

6. Librarians have to demonstrate new information products available in the market which are more useful to their community by permitting trial access for few days to make them aware of the sources which covers latest information useful to them.

7. Instead of having documents in libraries, Librarians can take license to access databases useful to them on subscription base & search the bibliographic information & provide to users for review along with abstract .After consulting this the desired articles can be obtained from the neighbor libraries or clearing centers on payment.
8. Industrial librarian must be expert in searching information from various databases. Librarians have to acquire skills of database searching, online searching, internet searching, federated searching etc. These skills helps librarians in providing various types of information to their users on demand & saves money in subscribing printed resources.

9. Best practices in industrial library can be adopted to provide core library services which users are demanding hence librarians have to initiate.

10. Network model of chemical industry libraries is presented to achieve resource sharing.

The research study is suitably concluded with satisfying the objectives and the hypothesis considered are proved true and it is felt that industrial libraries need proper library system and networking of these libraries definitely help to the user’s community. The objectives selected are discussed in different chapters as noted against each. 1) To study the need, growth and development of Chemical Industry (Chapter 3) 2) To study the information needs of the chemical industry users (chapter 4), 3) To study the expectations of industrial and research users from chemical industry libraries (chapter 6), 4) To identify the different information resources used and needed by the users (chapter 5, 7), 5) To identify and list information resources available in both print and electronic media (chapter 5), 6) To develop a model for networking chemical industry libraries in a city and state.(chapter 8)

This study is useful to librarian of chemical industry libraries and also for the other librarians as a model.